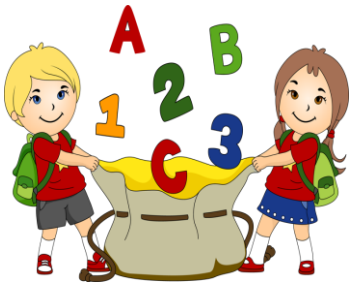


Part (1)

Exercise (1)

(1) Complete each of the following:

1) The multiplicative inverse of the number $\frac{-9}{8}$ is ……

2) If $\frac{a}{b} = \frac{2}{3}$, then $\frac{3a}{2b}$ = ……

3) The remainder of subtracting $\left(\frac{1}{5}\right)$ from $\left(-\frac{2}{5}\right)$ equals ……

4) The simplest form of the expression: $\frac{3}{4} \times \left(\frac{1}{2} - \frac{1}{3}\right)$ is ……

5) The rational number half way between $-\frac{5}{2}$ and $-\frac{3}{2}$ is ……

(2) Choose the correct answer from those given:

1) If $\frac{15}{x} = \frac{-3}{4}$, then x = ……

a) – 20 b) – 5 c) 5 d) 20

2) The number = $\frac{-9}{-7}$ is the additive inverse of the number: ……

a) $\frac{-9}{7}$ b) $\frac{-7}{9}$ c) $\frac{7}{9}$ d) $\frac{9}{7}$

3) If 5x – 3y = 0, then x : y = ……

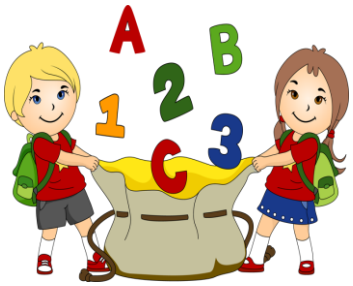
a) 5 : 3 b) 3 : 5 c) – 5 : 3 d) – 3 : 5

4) If a × $\frac{b}{3} = \frac{a}{3}$, then b equals: ……

a) – a b) 1 c) $\frac{a}{3}$ d) a

5) The number $\frac{5}{3}$ > ……

a) $\frac{10}{3}$ b) $\frac{25}{9}$ c) $\frac{10}{6}$ d) $\frac{3}{5}$



(3) Answer the following:

1) Complete in the same pattern:

$7 , 6\frac{1}{3} , 5\frac{2}{3} , 4\frac{1}{3} , \ldots\ldots\ldots , \ldots\ldots\ldots , \ldots\ldots\ldots 1\frac{2}{3}$

2) Use the property of distribution to calculate the value of:

$\frac{6}{37} \times 7 + \frac{6}{37} \times 5 + \frac{6}{37} \times (-11)$

3) If $-3\frac{4}{7} \times x = -3\frac{4}{7}$, then find the value of x.

4) If $x = \frac{3}{2}$, $y = -\frac{1}{4}$ and $z = -2$, then find the numerical value of:

$x - (z \div y)$

5) The ratio between exports and imports in one year is 3 : 4 , if exports increased by 20% and imports decreased by 10% in the next year. Find the ratio between exports and imports in the last year.

Exercise (2)

(1) Complete the following:

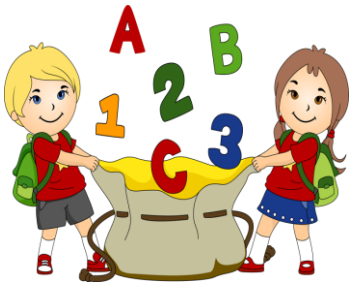
1) The additive inverse of the number $\frac{7}{25} \times (-5)^2$ is ……..

2) $3 \times$ …….. = 1

3) If $\frac{x-5}{x-7} = 0$, then $x =$ ……..

4) The rational number which hasn't a multiplicative inverse is …..

5) If $\frac{x}{2} + \frac{5}{7} = \frac{10}{35}$, then 2x equals ……..



(2) Choose the correct answer from those given:

1) $\frac{5}{8} - \frac{1}{8} >$ ……..

a) 1 b) $\frac{3}{4}$ c) $\frac{1}{2}$ d) $\frac{1}{4}$

2) The number of integers lying between $\frac{7}{4}$, $\frac{11}{8}$ is ……..

a) zero b) 1 c) 2 d) infinite number

3) The rational number $\frac{x}{-5}$ is negative if x = ……..

a) > zero b) < zero c) ≤ zero d) = zero

4) The remainders of dividing four consecutive integers by the number 3 respectively may be:

a) 1 , 2, 3, 1 b) 1, 2, 3, 4 c) 0, 1, 2, 3 d) 0, 1, 2, 0

(3) Answer the following questions:

1) Complete in the same pattern:

……. , $\frac{2}{2}$, $\frac{3}{4}$, $\frac{4}{8}$, $\frac{5}{16}$, …….. , …….. , $\frac{8}{128}$

2) If x = $-\frac{1}{3}$, y = $\frac{3}{4}$ and z = – 3 then find the value of:

First: (x + y) ÷ z second: xy + yz

3) If the two rational numbers $\frac{3x}{4}$ and $\frac{2}{3}$ are equal then find the value of x.

4) Find the value of the expression: $\frac{1}{3} \times \left(-\frac{1}{3}\right) \div \left(-\frac{1}{3}\right) \times \frac{1}{5}$

5) Find the rational number that lies two third of the way from $\frac{4}{7}$ to $1\frac{3}{4}$ from the smallest.

Exercise (3)

(1) Complete the following:

1) $\frac{3}{5} + \frac{7}{10} + \left(-\frac{1}{2}\right)$ = ...

2) $\frac{4}{25} = \frac{2}{5} \times \frac{.....}{35}$

3) $\left(\frac{2}{7} + \frac{3}{5}\right)$ is the multiplicative inverse of the rational number ……..

4) The rational number that lies half way between $\frac{3}{7}$ and $\frac{6}{7}$ is ……

5) $\frac{2}{3}\left(2 + \frac{1}{2}\right) = \frac{2}{3} \times 2 + \frac{2}{3} \times$ ……..

(2) Choose the correct answer from those given:

1) If $\frac{7}{x+5}$ is a rational number , then x ≠ ……..

a) – 5 b) 0 c) 2 d) 10

2) If x = 3 , y = 4 and z = 6 , then $\frac{x}{y} - \frac{z}{x}$ equals:

a) $-1\frac{1}{4}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $1\frac{3}{4}$

3) The remainder of subtracting $\frac{3}{7}$ from $\frac{9}{21}$ equals:

a) zero b) $\frac{6}{21}$ c) $\frac{6}{14}$ d) $\frac{12}{28}$

4) If 3 a = 27 and ab = 1 , then b = ……..

a) $\frac{1}{9}$ b) $\frac{1}{5}$ c) 5 d) 9

5) Which of the following relations is true, where x = 3 , y = 5 , z = 15

a) y = xz b) x = yz c) $y = \frac{z}{x}$ d) $z = \frac{y}{x}$

(3) Answer the following questions:

1) Arrange the following rational numbers in a descending order:

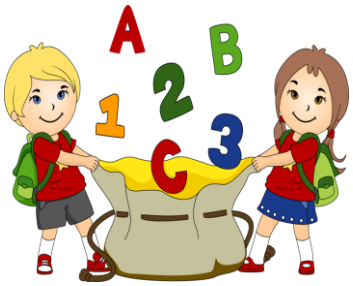
$\frac{3}{10}$, $\frac{7}{30}$, $\frac{1}{3}$, $\frac{1}{5}$, $\frac{4}{15}$

2) If $x = -\frac{7}{4} \times -\frac{4}{7}$, then find the value of x

3) Find the result of: $\frac{7}{12} \times \frac{23}{45} + \frac{7}{12} \times \frac{23}{45} - 2 \times \frac{23}{45}$

4) If $x = \frac{2}{3}$, $y = -\frac{1}{6}$, z = – 3 , then find: (x ÷ y) – (z ÷ y)

5) Find the number one fourth of the way from $-\frac{1}{9}$ to $-\frac{7}{8}$



Exercise (4)

(1) Complete each of the following:

1) The degree of the term $-3a^2b$ is …….. and its coefficient is ……..

2) The increase of 7x than 10 x is ……..

3) The perimeter of the rectangle whose dimensions are (2x + 1) and (2 – x) equals …….. unit length.

4) $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times$ …….. $\times \frac{49}{50} =$ …….

(2) Choose the correct answer from those given:

1) The algebraic expression $x^3 - 3x^2 + 4$ is of the …….. degree.

a) first b) second c) third d) fourth

2) 2x + 3y is greater than 3y – 2x by ……..

a) – 6y b) – 4x c) 4x d) 6y

3) $\frac{3x}{5} - \frac{x}{5}$ equals:

a) $\frac{2}{5}$ b) $\frac{x}{5}$ c) $\frac{2x}{5}$ d) 2x

(3) Simplify to simplest form: 5x + 10y + 6x – 3y + 7y – 4x

(4) Find four rational numbers between $\frac{1}{3}$ and $\frac{7}{9}$

(5) A rational number, if it is subtracted from its additive inverse, the result will be $\frac{3}{2}$ what is the number?

Exercise (5)

(1) Choose the correct answer from those given:

1) The rational number $\frac{x}{-5}$ is negative if x :

a) > zero b) < zero c) ≤ zero d) zero

2) If a = 0 , b = 5 and c = 2 , then the numerical value of $a^2b + ac$ equals :

a) 0 b) 2 c) 7 d) 10

3) If $\frac{a}{b} = 60$, $\frac{a}{3b}$ then equals:

a) 17 b) 20 c) 23 d) 180

(2) 1) Find the result of: 19 × 17 + 19 × 8 – 19 × 15 by identifying the common factor.

2) If $x = -\frac{1}{3}$, $y = \frac{3}{4}$ and z = – 3 , find the value of:

a) x^2yz b) xy + yz c) x + y – z

(3) 1) Divide: $x^3y - 4xy^2 + 6xy$ by xy

2) What is the increase of $3x^2 - 5x + 2$ than the sum of: $x + 5x^2 + 1$ and $2x^2 - 4 - 2x$

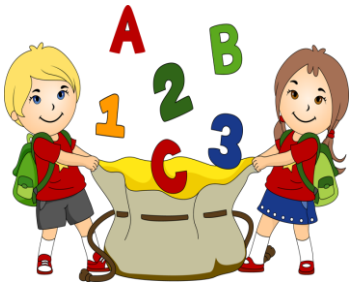
3) Simplify to the simplest form: $\left(\frac{1}{3}\right)^2 \times \left(\frac{-1}{3}\right)^3 \div \left(\frac{-1}{3}\right)^4 \times \left(\frac{1}{5}\right)^0$

(4) 1) Find the product: (2x – 3y) (3x + 7y)

2) Simplify to simplest form: $\frac{(17)^2 - 2\times17 + 17}{17}$

3) If a = 3x , b = x + 2 and c = 2x – 3

Calculate the numerical value of the expression: $ab - c^2$ when x = 0



Exercise (6)

(1) Complete each of the following:

1) The degree of the algebraic term $-2x^2y$ is …….. and its coefficient is ……..

2) $(4x^2 + 2x) \div 2x$ = ……..

3) If a + 3b = 7 and c = 3 , then the value of the expression a + 3 (b + c) = ……..

4) The seventh tern in the pattern $\frac{1}{10000}$, $\frac{1}{1000}$, $\frac{1}{100}$, …….. is ……..

5) If x + y = 5 , then the numerical value of $x^2 + 2xy + y^2$ is ……..

(2) Choose the correct answer from those given:

1) If $(x + 4)(x - 3) = x^2 + m - 12$, then m equals: ……..

a) – 7x b) – x c) x d) 7x

2) If $(x + y)^2 = 15$ and $x^2 + y^2 = 9$, then xy = ……..

a) 1 b) 2 c) 3 d) 4

3) A rectangle whose length is 6ℓ and its width is 3 m , then its perimeter is ……..

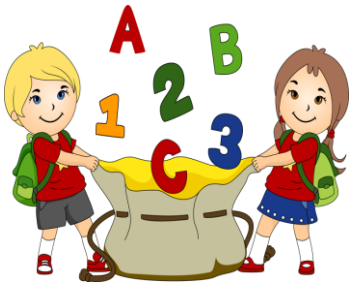
a) 9ℓm b) 18ℓm c) 3 $(2\ell + m)$ d) 6 $(2\ell + m)$

4) If x = 3 , y = 4 and z = 6, then $\frac{x}{y} - \frac{z}{x}$ equals: ……..

a) $-\frac{5}{4}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $\frac{7}{4}$

5) The relation which represents the uniform velocity of a car covered a distance (s) in a time (t) is:

a) $\frac{t}{s}$ b) $\frac{s}{t}$ c) ts d) t + s



(3)

1) Simplify to simplest form: 3 a (2a + 3b) – 2b (2a + 3b)

2) Simplify the expression $\frac{6x^3y+9y^3x}{3xy}$ to the simplest form.

3) Find the product: $(x + 1)(x^2 – x + 1)$

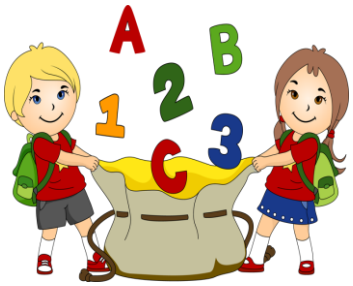
(4)

1) What is the decrease of 2a – 8b – c than the sum of 3a – 3b + c and 2 a – 4b – 8c

2) Factorize by identifying the highest common factor:

$5 (48)^2 + 7 \times 48 + 53 \times 48$

3) Find the result 201 × 199 as ad: difference of two squares.



Part (2)

Exercise (1)

(1) Complete each of the following:

1) If $3a \times k = 12a^3$, then k = ……

2) …… $(3x +$ ……$) = 9x^2 + 15xy$

3) $4a^2 + 8ab = 4a$ (…… + ……)

4) $(4a^2 + 2a) \div 2a =$ (……)

5) $(50 + 1)(50 - 1) = 2500 -$ ……

6) $a(a + b) - b(a + b) = (a + b) \times$ ……

(2) Choose the correct answer:

1) – 3x × – 5y equals

a) –15xy b) – 8xy c) 8xy d) 15xy

2) If $a^2 = 25$, $b^2 = 9$ and ab = 15 then $(a - b)^2$ = ……

a) – 4 b) 4 c) 8 d) 12

3) $(x + y)^2 - (x - y)^2$

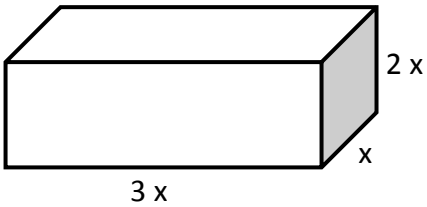
a) 0 b) – 2xy c) xy d) 4xy

4) In the opposite figure:

Volume of the cuboid equals:

a) 6x b) $6x^2$

c) $5x^3$ d) $6x^3$

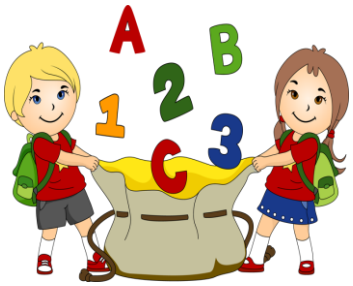


(3) Find the product: (2x – 3y) (2x + 3y)

(4) Factorizing by identifying the H.C.F: $27x^4 - 18x^3$

(5) Use the distribution property to find the value of

$\frac{6}{37} \times 7 + \frac{6}{37} \times 5 + \frac{6}{37} \times (-11)$



Exercise (2)

(1) Complete the following:

1) The degree of the algebraic term $-2x^2y$ is …….. and its coefficient is ……..

2) The seventh term in the pattern $\frac{1}{10000}$, $\frac{1}{1000}$, $\frac{1}{100}$, …….. is ……..

3) If a + 3b = 7 and c = 3 , then the value of the expression a + 3 (b + c) =……..

4) $(4x^2 + 2x) \div 2x$ = ……..

5) If x + y = 5 , then the numerical value of $x^2 + 2xy + y^2$ is ……

(2) Choose the correct answer:

1) If $(x + 4)(x - 3) = x^2 + m - 12$, then m equals:

a) –7x b) – x c) x d) 7x

2) If $(x + y)^2 = 15$ and $x^2 + y^2 = 9$, then xy = …….

a) 1 b) 2 c) 3 d) y

3) A rectangle whose length is 6 ℓ and its width is 3m , then its perimeter is ……..

a) 9 ℓm b) 18 ℓm c) 3 (2ℓ + m) d) 6 (2 ℓ + m)

4) If x = 3 , y = 4 and z = 6 , then $\frac{x}{y} - \frac{z}{x}$ equals = ……

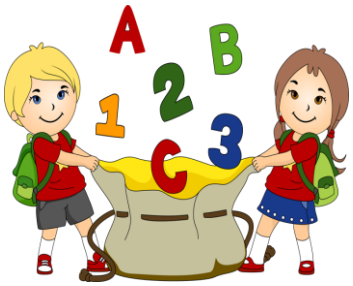
a) $-\frac{5}{4}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $\frac{7}{4}$

5) The relation which represents the uniform velocity of a car covered a distance (s) in a tine (t) is:

a) $\frac{t}{s}$ b) $\frac{s}{t}$ c) ts d) t + s

(3) Simplify to simplest form: 4n (n + 5) + n (6 – n) then find the numerical value of the expression when n = – 1

(4) Simplify to simplest form: $\frac{(17)^2 - 2 \times 17 + 17}{17}$



Exercise (3)

(1) Choose the correct answer from those given:

1) The arithmetic mean of the set of values 19 , 32 , 27, 6, 6 is …

a) 90 b) 32 c) 18 d) 6

2) The median of the set of values 15, 22 , 9, 11 , 33 is ……

a) 9 b) 15 c) 18 d) 90

3) The median of the set of values 34, 23, 25, 40, 22, 4 is ……..

a) 22 b) 23 c) 24 d) 25

4) If the arithmetic mean of six values 12, then the sum of these values equals: …….

a) 2 b) 6 c) 18 d) 72

5) If the arithmetic mean of the values 27 , 8 , 16 , 24 , 6 , k is 14, then k equals: …….

a) 3 b) 6 c) 27 d) 84

6) If the order of the median of a set of values is the fourth, then number of these values equals: …….

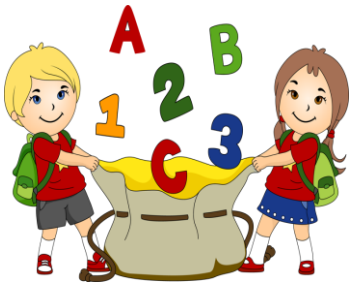
a) 3 b) 5 c) 7 d) 9

7) If the order of the median of a set of values is the fifth, then number of these values equals: ……..

a) 5 b) 6 c) 9 d) 10

8) If the median of the values 27 , 45 , 19 , 24 , 28 is x, then x equals: ……

a) 24 b) 27 c) 28 d) 45



(2) Complete:

1) The mode of the values 14 , 11 , 12 , 11 , 14 , 15 , 11 is ….

2) If the mode of the values 15 , 9 , x + 1 , 9 , 15 is 9 , then x = ….

3) The arithmetic mean of the values 18 , 35 , 24 , 6 equals ……

4) If arithmetic mean of the numbers 3 , 3 , x equals 4, then x = ……

5) If arithmetic mean of the values 9 , 6 , 5 , 14 , k is 7, then k = …...

6) If the sum of live numbers is 30, then the arithmetic mean of these numbers is ……

(3) Answer the following questions:

1) The following table shows the number of hours that two athletes trained in a month.

Kamal	63	70	58	30	48	53	75	72	68	46	57	66
Amer	68	56	65	70	50	49	57	62	64	54	52	63

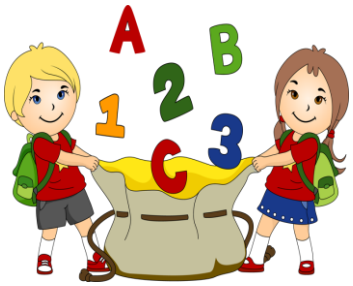
Write the median hours of training for each athlete.

2) The following table shows the marks of a student in mathematics during a school year.

Month	October	November	December	March	April	May
Marks	30	34	42	36	38	50

First: Find the arithmetic mean for the marks of this student.

Second: Find the difference between the greatest and the smallest mark.



3) The students recorded the time of their bus journeys to school for 3 weeks, they wrote times as follows: 16, 18, 14, 17, 18, 15, 19, 13, 15, 22, 16, 21, 20, 13, 18

Calculate each of the meantime, the median and the mode time.

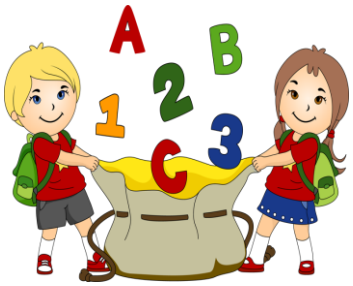
4) If the arithmetic mean of a student's marks in five exams is 36 marks, what is the mark that he must get in the 6^{th} exam to get his mean in the six exams 38 marks?

5) If the arithmetic mean of a student's marks in three exams (mathematics, science and social studies) is 40 marks, and his arithmetic mean in another two exams (Arabic and English) is 42 marks.

Find the arithmetic mean of his marks in the five exams.

Algebra

1st Preparatory



Model Answers

Part (1)

Exercise (1)

(1) Complete:

1) $\frac{-8}{9}$ 2) 1 3) $\frac{-3}{5}$

4) $\frac{1}{8}$ 5) $\frac{-1}{2}$

(2) Choose:

1) - 20 2) $\frac{-9}{7}$ 3) 3 : 5

4) b = 1 5) $\frac{3}{5}$

(3) 1) $3\frac{2}{3}$, 3 , $2\frac{1}{3}$ 2) $\frac{6}{37}$ 3) x = 1

4) $\frac{13}{2}$ 5) $\frac{18}{5}$ x

Exercise (2)

(1) Complete:

1) - 7 2) $\frac{1}{3}$ 3) x = 5 4) 0 5) $\frac{-12}{7}$

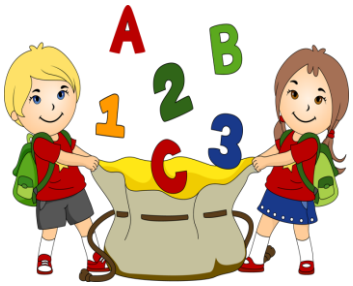
(2) Choose:

1) > $\frac{1}{4}$ 2) 1 3) x > zero 4) 0 , 1, 2, 0

(3) Answer the following questions:

1) $\frac{6}{32}$, $\frac{7}{64}$ 2) First: $\frac{-5}{36}$ Second: $\frac{-5}{2}$

3) x = $\frac{8}{9}$ 4) $\frac{5}{3}$ 5) $\frac{27}{28}$



Exercise (3)

(1) Complete:

1) $\frac{8}{10} = \frac{4}{5}$ 2) 14 3) $\frac{35}{31}$

4) $\frac{9}{14}$ 5) $\frac{1}{2}$

(2) Choose:

1) $x \neq -5$ 2) $\frac{3}{4} - \frac{6}{3} = -1\frac{1}{4}$ 3) zero

4) $\frac{1}{9}$ 5) $y = \frac{z}{x}$

(3) Answer the following questions:

1) $\frac{1}{3}$, $\frac{3}{10}$, $\frac{4}{15}$, $\frac{7}{30}$, $\frac{1}{5}$ 2) 1

3) zero 4) - 22 5) $\frac{-29}{96}$

Exercise (4)

(1) Complete:

1) Third degree , - 3 2) -3 x

3) 2x + 6 4) $\frac{1}{50}$

(2) Choose:

1) Third 2) 4x 3) $\frac{2x}{5}$

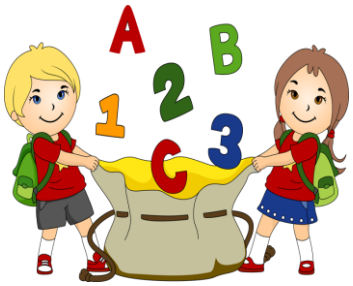
(3) 7x + 14 y

(4) $\frac{10}{27}$, $\frac{11}{27}$, $\frac{12}{27}$, $\frac{13}{27}$

$-5x + 3x^2 + 2$

$\underline{-x + 7x^2 - 3}$

$-4x - 4x^2 + 5$



$$x + 5x^2 + 1$$
$$\underline{-\ 2x + 2x^2 - 4}$$
$$-\ x + 7x^2 - 3$$

(5) $\dfrac{\left(\frac{1}{3}\right)^2 \times \left(\frac{-1}{3}\right)^3}{\left(\frac{-1}{3}\right)^4 \times \left(\frac{1}{5}\right)^0} = \dfrac{\frac{1}{9}}{\frac{-1}{3}} = \frac{1}{9} \times -3 = \frac{-1}{3}$

Exercise (5)

(1) Choose:

1) > zero 2) 0 3) 20

(2) a) $\frac{-1}{4}$ b) $\frac{-5}{2}$ c) $\frac{-31}{12}$

(3) 1) $-4x^2 - 4x + 5$

2) $\frac{-1}{3}$

Exercise (6)

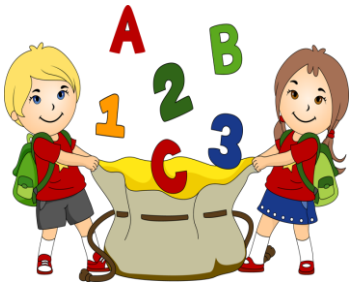
(1) Complete:

1) Third degree , - 2 2) 100

(2)

1) 6 $(2\ell + m)$ 2) $\frac{-5}{4}$ 3) ts

(3) 3a + b – 6c



Part (2)

Exercise (1)

(1) Complete each of the following:

1) $k = 4a^2$ 2) $3x , 5y$ 3) $a , 2b$

4) $2a + 1$ 5) 1 6) $(a – b)$

(2) Choose the correct answer:

1) d) $15xy$ 2) b) 4 3) d) $4xy$ 4) d) $6x^3$

(3) $4x^2 – 9y^2$

(4) $9x^3 (3x – 2)$

(5) $\frac{6}{37} \times (7 + 5 + (–11)) = \frac{6}{37}$ " distribution property "

Exercise (2)

(1) Complete the following:

1) 3^{rd} , $– 2$ 2) 100 3) 16 4) $2x + 1$ 5) 25

(2) Choose the correct answer:

1) c) x 2) c) 3 3) d) $6 (2 \ell + m)$

4) a) $-\frac{5}{4}$ 5) b) $\frac{s}{t}$

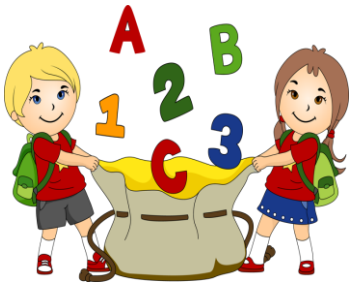
(3) $4n^2 + 20 n + 6n – n^2$

$3n^2 + 26n$

at $n = 1$, $3x (1)^2 + 26 \times 1$

$= 3 + 26 = 29$

(4) $17 – 2 + 1 = 16$



Exercise (3)

(1) Choose the correct answer from those given:

1) c) 18 **2) b) 15** **3) c) 24** **4) d) 72**

5) a) 3 **6) c) 7** **7) c) 9** **8) b) 27**

(2) Complete:

1) 11 **2) 8** **3) 20.75**

4) 6 **5) 1** **6) 6**

(3) Answer the following questions:

1) Kama: 60.5 Amer: 59.5

2) First: $\frac{30+34+42+36+38+50}{6} = 38\frac{1}{3}$

Second: 50 – 30 = 20

3) mean = $\frac{255}{15} = 17$ median = 17 mode = 18

4) $\frac{1^{st}+2^{nd}+3^{rd}+4^{th}+5^{th}}{5} = 36$

sum = 5 × 36 = 180

$\frac{180+6^{th}}{6}$ = 38

$180 + 6^{th} = 228$

$6^{th} = 228 – 180 = 48$

5) $\frac{sum}{3} = 40$, sum = 40 × 3 = 120

$\frac{sum}{2} = 42$, sum = 42 × 2 = 84

The mean of the five exams = $\frac{120+84}{5} = \frac{204}{5} = 40.8$

Part (1)

Exercise (1)

(1) Choose the correct answer:

1) The acute supplements …… angle.

a) acute b) obtuse c) right d) reflex

2) The right angle complements angle whose measure is ……

a) 0° b) 45° c) 90° d) 180°

3) If m (∠ A) = 2 m (∠ B) , A complements ∠ B , then m (∠ A) = ….

a) 15° b) 30° c) 45° d) 60°

4) If the ratio between two supplementary angles is 4 : 5 , then the measure of the greater angle is ……

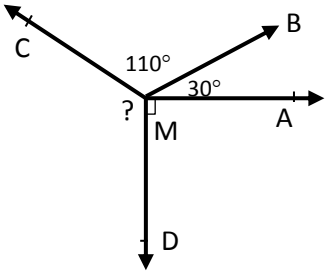
a) 80° b) 100° c) 120° d) 150°

(2) In the figure opposite:

m (∠ AMB) = 30°, m (∠ BMC) = 110°

and m (∠ AMD) = 90°.

Find m (∠ CMD)

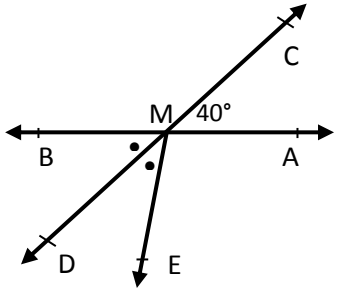


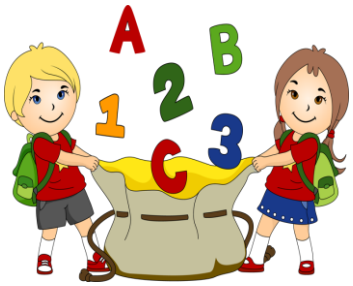
(3) In the figure opposite:

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD}$ = {M} , m (∠ AMC) = 40° and

$\overrightarrow{MD}$ bisects ∠ BME.

Find m (∠ AME)





Exercise (2)

(1) Complete:

1) The measure of the straight angle equals ……

2) The angle whose measure is 36° complements an angle of measure …… and supplements an angle of measure ……

3) If the two outer sides of two adjacent angles are on the same straight line, then the two angles are ……

4) The sum of the measure of the accumulative angles at a point is …… .

5) The angle whose measure is greater than 180° but less than 360° is called ……

(2) Choose the correct answer:

1) If m (∠ A) = 90°, then m (reflex ∠ A) = ……

a) 0° b) 90° c) 180° d) 270°

2) The measure of the straight angle equals ……

a) 90° b) 180° c) 270° d) 360°

3) The angle whose measure is 179°, its type is ……

a) acute b) right c) obtuse d) straight

4) The sum of the measures of two adjacent angles formed by a straight line and a ray is ……

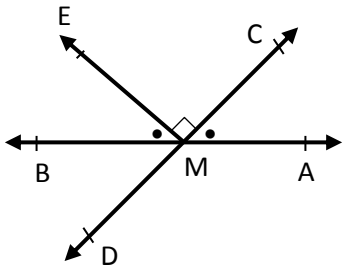
a) 90° b) 180° c) 270° d) 360°

(3) In the figure opposite:

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD}$ = { M } , m (∠ CME) = 90°,

m (∠ AMC) = m (∠ EMB)

Find: m (∠ AMC) , m (∠ BMD) , m (∠ AMD)



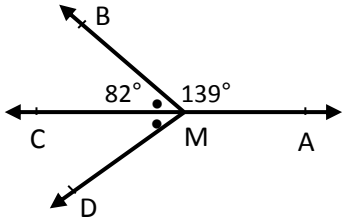
(4) In the figure opposite:

$\overrightarrow{MC}$ bisects ∠ BMD , m (∠ BMD) = 82°,

m (∠ AMB) = 139°

Prove that:

MA , MC are on the same straight line.



Exercise (3)

(1) Complete:

1) The acute angle is the angle whose measure is less than ……
and more than ……

2) The two complement angles whose sum of their measures is ……

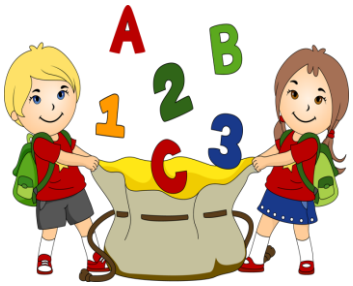
3) The two adjacent angles formed by a straight line and a ray ……

4) If two straight lines intersect, then two vertically opposite angles are ……

(2) Choose the correct answer:

1) The angle whose measure is 37° complements an angle measure ……

a) 37° b) 53° c) 63° d) 143°



2) The type of the angle whose measure equals 89°, is ……

a) acute b) right c) obtuse d) reflex

3) If m (∠ A) + m (∠ B) = 180°, then ∠ A and ∠ B are ……

a) adjacent b) complementary

c) supplementary d) equal in measure

4) The sum of the measures of the accumulative angles at a point equals ……

a) 90° b) 180° c) 270° d) 360°

5) If the ratio between two adjacent and supplementary angles is 1 : 2, then the measure of the smaller angle is ……

a) 30° b) 60° c) 120° d) 150°

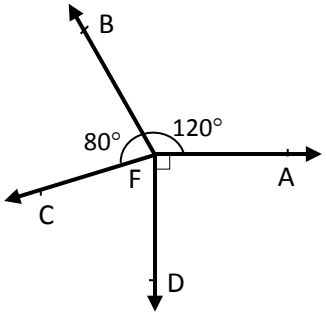
(3) In the figure opposite:

m (∠ AFB) = 120° ,

m (∠ BFC) = 80° , and

m (∠ AFD) = 90°

Find: m (∠ CFD)

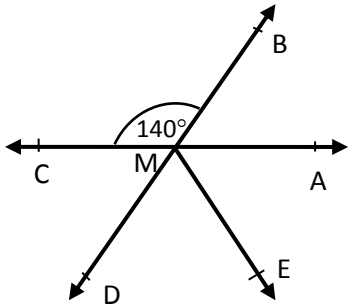


(4) In the figure opposite:

$\overleftrightarrow{AC} \cap \overleftrightarrow{BD}$ = {M} ,

$\overleftrightarrow{ME}$ bisect (∠ AMD)

Find: (∠ AMD) , m (∠ AME)



Exercise (4)

(1) Complete:

1) The two triangles are congruent if two sides and …….. are congruent with their corresponding in the other triangle.

2) The two right-angled triangles are congruent if ……..

3) Two triangles are congruent if two angles and …….. are congruent with their corresponding in the other triangle.

4) Two triangles are congruent if each …….. of one triangle are congruent with their corresponding in the other triangle.

5) If the two triangles ABC and DEF are congruent, then: BC = ….., m (∠ E) = m (∠ …….)

6) If DE = XY, DF = XZ and m (∠ D) = m (∠ X), then ΔΔ (….., …..) are congruent.

7) The two triangles XYZ and MNL are congruent, if YZ = 8 cm, m (∠ Y) = 40° then in the other triangle: …….. = 8 cm, m (∠ ……..) = 40°

(2) Choose the correct answer:

1) Two triangles are congruent if …… are congruent.

a) two corresponding sides.

b) two corresponding sides and the included angle.

c) their corresponding angles.

2) If AB = DF = 5 cm, AC = DE = 7 cm, m (∠ A) = m (∠ D) = 55° then the two triangles ABC, DFE are congruent with ……

a) two sides and included angle

b) three sides

c) two angles

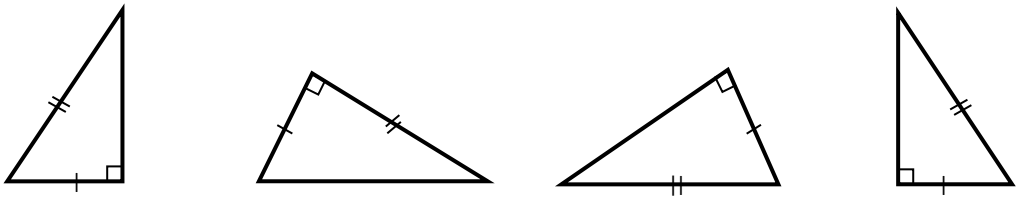
d) hypotenuse and a side

3) If the two triangles ABC, XYZ are congruent, then ……

a) AB = YZ b) BC = XZ

c) YX = CA d) ZY = CB

4) The following triangles are congruent except figure(……):



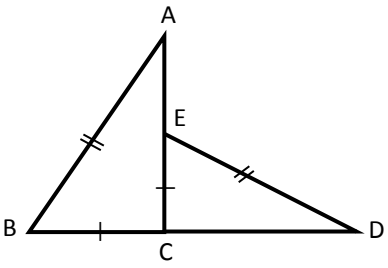
(1) (2) (3) (4)

5) In the figure opposite:

If AB = DE , BC = EC, then m (∠ A) = ……

a) m (∠ B) b) m (∠ D)

c) m (∠ DEC) d) m (∠ ACD)

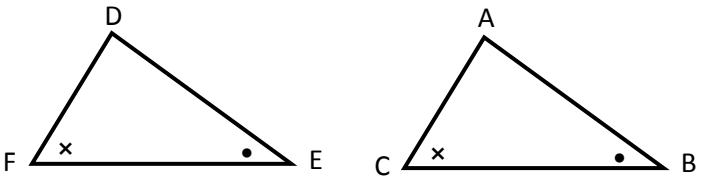


6) In the figure opposite: The necessary condition to make Δ ABC, Δ DEF are congruent if:

a) AB = DE b) AC = DF

c) BC = EF

d) m (∠ A) = m (∠ D)



7) In the following figure: pair of congruent triangles is figure (……..):

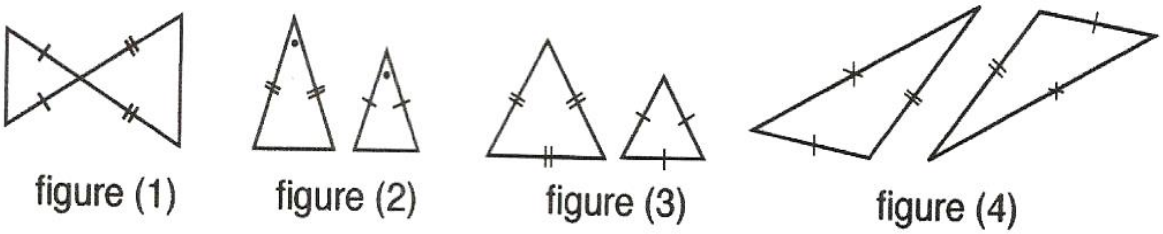
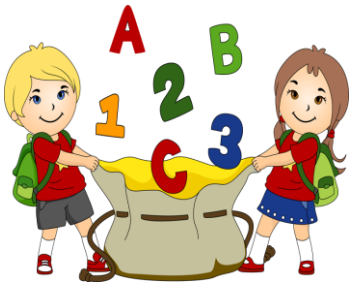


figure (1) figure (2) figure (3) figure (4)



(3) In the figure below: Are the two triangles congruent?

(given reason),

Note: The similar signs denote the congruency of the elements marked by them.

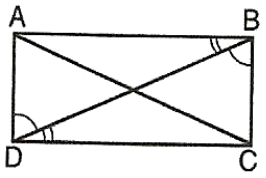


figure (1)

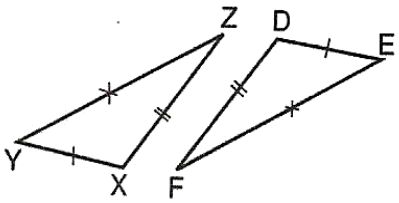


figure (2)

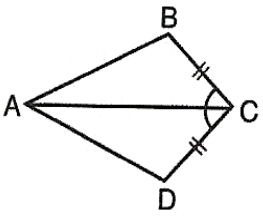


figure (3)

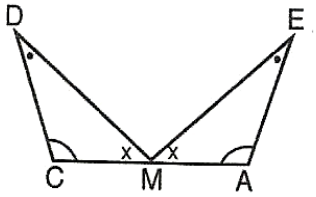


figure (4)

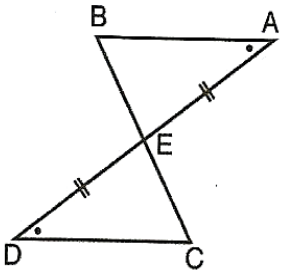


figure (5)

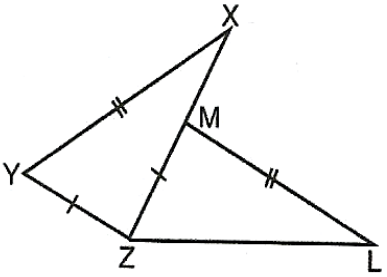


figure (6)

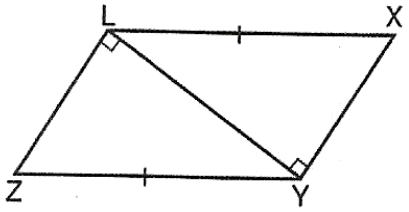


figure (7)

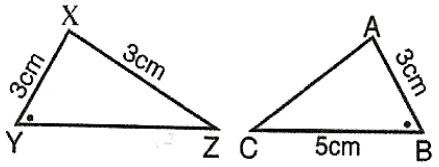


figure (8)

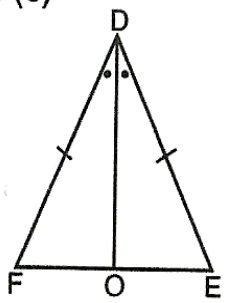


figure (9)

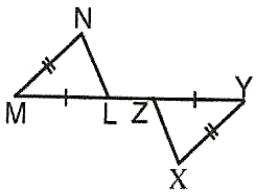


figure (10)

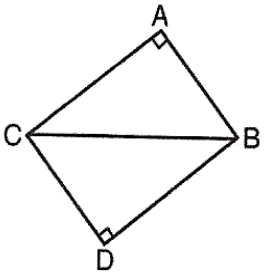


figure (11)

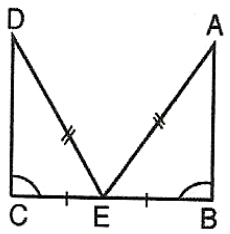


figure (12)

Part (2)

(1) Complete the following:

1) If a straight line intersects two parallel straight lines, then every two interior angles on one side of the transversal are ……

2) Two straight lines are parallel if they are cut by a transversal such that the two interior angles on one side of the transversal ……

3) If two straight lines are parallel to a third straight line, then these two straight lines ……

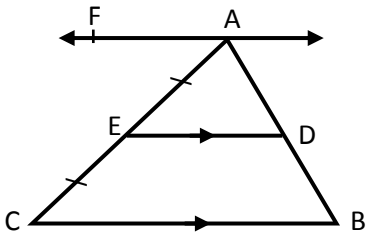
4) A straight line that is perpendicular to one of two parallel lines is ……

5) The two straight lines perpendicular to a third one are ……

6) In the figure opposite:

If AB = 3 cm

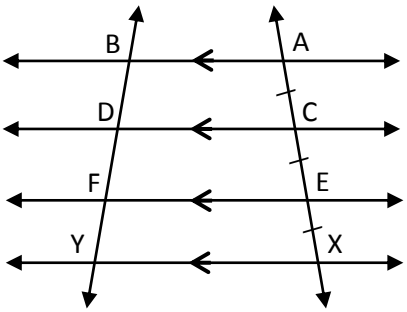
then BD = …… cm



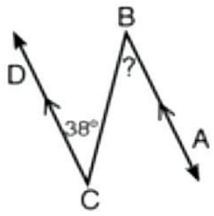
7) In the figure opposite:

If BF = 2 cm

then BY = …… cm



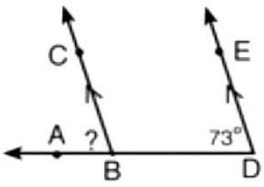
(2) In each of the following figures, find m (∠ ABC):



$\overrightarrow{BA}$ // $\overrightarrow{CD}$

m (∠ BCD) = 38°

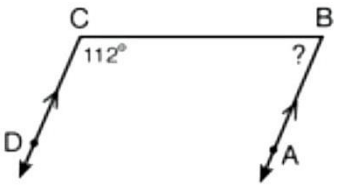
figure (1)



$\overrightarrow{DE}$ // $\overrightarrow{BC}$

m (∠ EDB) = 73°

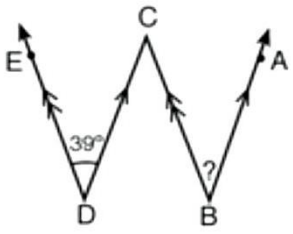
figure (2)



$\overrightarrow{BA}$ // $\overrightarrow{CD}$

m (∠ BCD) = 112°

figure (3)

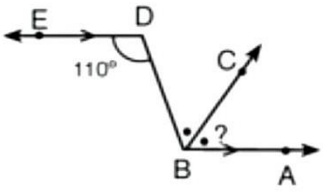


$\overrightarrow{BA}$ // $\overrightarrow{DC}$

$\overrightarrow{BC}$ // $\overrightarrow{DE}$

m (∠ CDE) = 39°

figure (4)

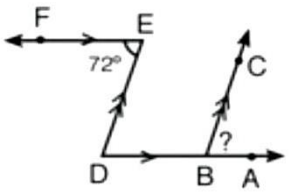


$\overrightarrow{BA}$ // $\overrightarrow{DE}$

$\overrightarrow{BC}$ bisects ∠ ABD

m (∠ BDE) = 110°

figure (5)



$\overrightarrow{DA}$ // $\overrightarrow{EF}$

$\overrightarrow{BC}$ // $\overrightarrow{DE}$

m (∠ DEF) = 72°

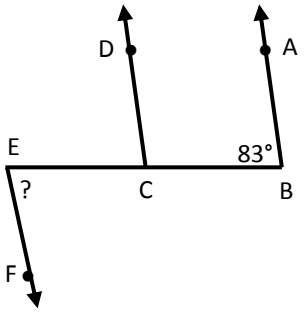
figure (6)

(3) In the opposite figure:

$\overrightarrow{BA}$ // $\overrightarrow{CD}$, $\overrightarrow{CD}$ // $\overrightarrow{EF}$

and m (∠ ABC) = 83°

Find: m (∠ CEF)

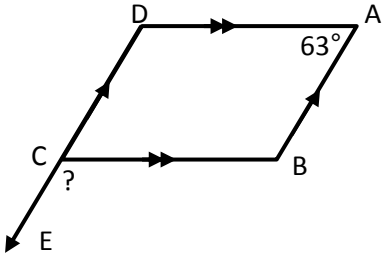


(4) In the opposite figure:

$\overrightarrow{AB}$ // $\overrightarrow{DC}$, $\overrightarrow{AD}$ // $\overrightarrow{BC}$ and

m (∠ BAD) = 63°

Find m (∠ BCE)

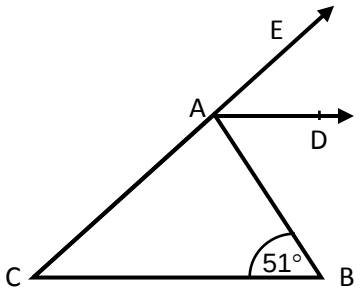


(5) In the opposite figure:

$\overrightarrow{AD}$ // $\overrightarrow{CB}$, $\overrightarrow{AD}$ bisects ∠ BAE

and m (∠ B) = 51°

Find: m (∠ BAD) , m (∠ C)

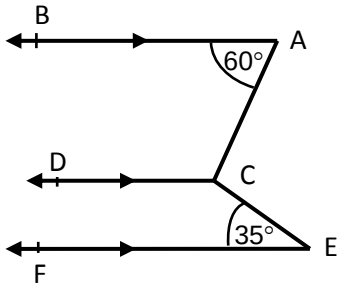


(6) In the opposite figure:

$\overrightarrow{AB}$ // $\overrightarrow{CD}$, $\overrightarrow{AB}$ // $\overrightarrow{EF}$

m (∠ A) = 60°, m (∠ E) = 35°

Find m (∠ ACE)



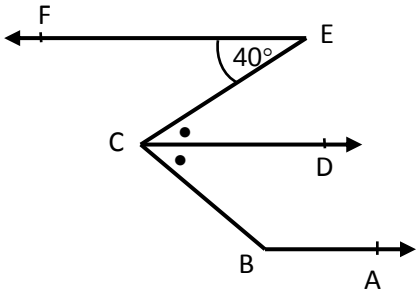
(7) In the opposite figure:

$\overrightarrow{BA}$ // $\overrightarrow{CD}$, $\overrightarrow{CD}$ // $\overrightarrow{EF}$

$\overrightarrow{CD}$ bisects ∠ BCE

and m (∠ CEF) = 40°

Find m (∠ B)



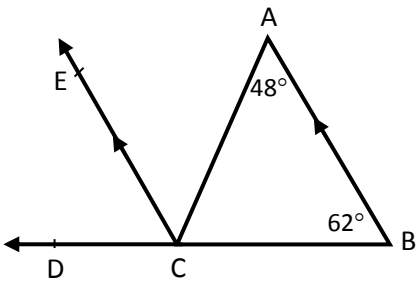
(8) In the opposite figure:

$\overrightarrow{BA}$ // $\overrightarrow{CE}$, m (∠ A) = 48°

D ∈ $\overrightarrow{BC}$, m (∠ B) = 62°

Find: m (∠ ECD) , m (∠ ACE) ,

and m (∠ ACB)



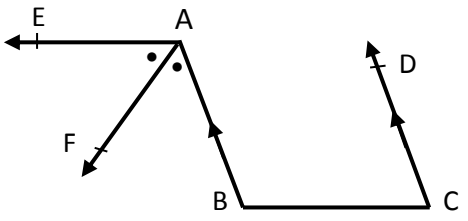
(9) In the opposite figure:

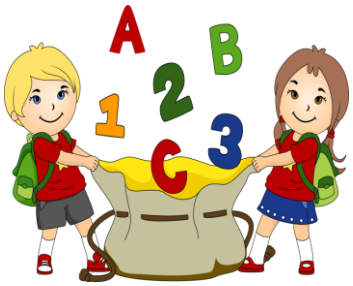
$\overrightarrow{CD}$ // $\overrightarrow{BA}$, $\overrightarrow{CB}$ // $\overrightarrow{AE}$

$\overrightarrow{AF}$ bisects ∠ BAE, and

m (∠ FAE) = 58°

Find: m (∠ C)





(10) In which of the following figures: $\overleftrightarrow{AB}$ // $\overleftrightarrow{CD}$

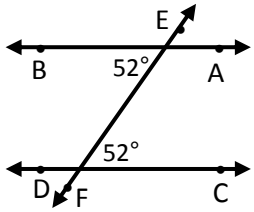


Figure (1)

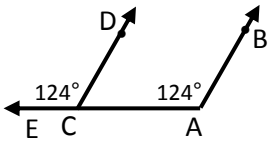


Figure (2)

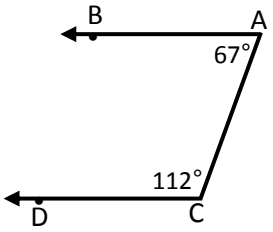


Figure (3)

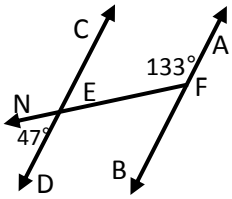


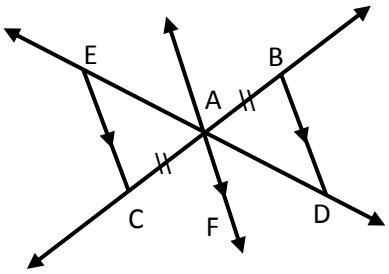
Figure (4)

(11) In the figure opposite:

$\overleftrightarrow{BD}$ // $\overleftrightarrow{AF}$ // $\overleftrightarrow{CE}$, AB = AC and

DE = 12 cm

Find the length of $\overline{AD}$

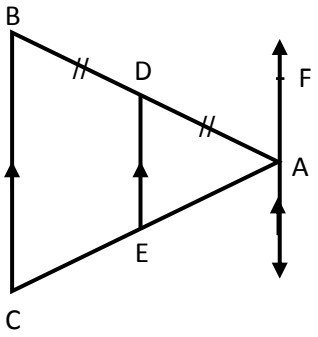


(12) In the figure opposite:

$\overleftrightarrow{AF}$ // $\overleftrightarrow{DE}$ // $\overleftrightarrow{BC}$, AD = BD

AD = 5 cm, AE = 4 cm, BC = 6 cm

Find the perimeter of Δ ABC



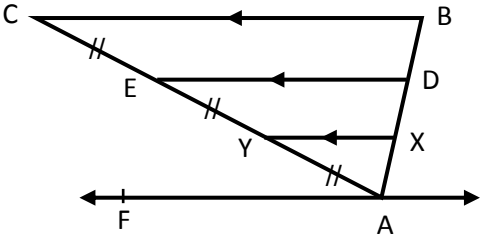
(13) In the figure opposite:

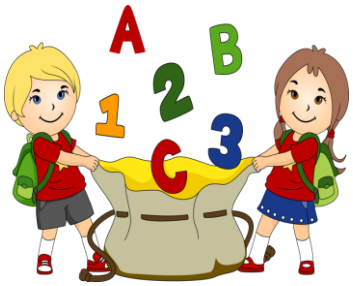
$\overleftrightarrow{AF}$ // $\overleftrightarrow{XY}$ // $\overleftrightarrow{DE}$ // $\overleftrightarrow{BC}$ and

AY = YE = EC ,

AY = 3 cm , AX = 2 cm ,

the perimeter of Δ ABC = 23 cm find BC





Model Answer

Part (1)

Exercise (1)

(1) Choose:

1) obtuse 2) 0° 3) 60° 4) 100°

(2) 360 - (110 + 30 + 90) = 130°

(3) 180 - 80 = 100°

Exercise (2)

(1) Complete:

1) 180°
2) 90 - 36 = 54° 180 - 36 = 144°
3) supplementary
4) 360°
5) reflex angle

(2) 1) 270° 2) 180° 3) obtuse angle 4) 180°

(3) m (∠ AMC) = 180 - 90 = 90°

$\frac{90}{2}$ = 45°

m (∠ BMD) = m (∠ AMC) = 45° → (V.O.A)

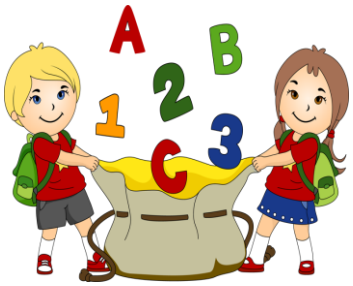
m (∠ AMD) = 180 - 45 = 135°

(4) ∵ $\overline{MC}$ bisect (∠ BMD)

∴ m (∠ CMB) = $\frac{82}{2}$ = 41°

∵ m (∠ CMB) + m (∠ BMA) = 41 + 139 = 180°

∴ $\overrightarrow{MC}$, $\overrightarrow{MA}$ are on the same straight line



Exercise (3)

(1) 1) 90° , zero 2) 90°

3) are supplementary 4) equal

(2)

1) 53° 2) acute 3) supplementary

4) 360° 5) 60°

(3) m (∠ CFD) = 360 - (120 + 80 + 90) = 70°

(4) m (∠ AMD) = m (∠ BMC) = 140° → (V.O.A)

∵ $\overline{ME}$ bisect (∠ AMD) = $\frac{140}{2} = 70°$

Exercise (4)

(1) 1) Included angle

2) The hypotenuse and a side of one triangle are congruent to the corresponding parts of the other.

3) The side drawn between their vertices

4) sides 5) EF , B

6) ΔΔ DEF , XYZ 7) NL , m (∠ n)

(2) 1) b 2) a 3) d 4) 2

5) b 6) c 7) 4

(3)

1) yes (A.S.A) 2) yes (S.S.S)

3) yes (S.A.S) 4) No

5) yes (A.S.A) 6) No

7) yes (R.H.S) 8) No

9) yes (S.A.S) 10) No

11) No 12) No

Part (2)

(1) Complete the following:

1) supplementary
2) supplementary
3) are parallel
4) perpendicular to the other
5) parallel
6) 1.5 cm
7) 3 cm

(2)

1) 38°
2) 73°
3) 180 - 112 = 68°
4) 39°
5) $\frac{110}{2} = 55°$
6) 72°

(3) ∵ $\overline{BA}$ // $\overline{CD}$, $\overline{BC}$ transversal

∴ m (∠ DCE) = m (∠ ABC) = 83° corresponding angles

∵ $\overline{CD}$ // $\overline{EF}$, $\overline{CE}$ transversal

∴ m (∠ FEC) = m (∠ DCE) = 83° Alternates angles

(4) ∵ $\overline{AB}$ // $\overline{CD}$, $\overline{AD}$ transversal

∴ m (∠ ADC) = 180 - 63 = 117° interior angles

∵ $\overline{AD}$ // $\overline{CB}$, $\overline{CD}$ transversal

∴ m (∠ BCE) = m (∠ ADC) = 117° Corresponding angles

(5) ∵ $\overline{AD}$ // $\overline{CB}$, $\overline{AB}$ transversal

∴ m (∠ DAB) = m (∠ B) = 51° Alternate angles

∵ $\overline{AD}$ bisect (∠ BAE)

∴ m (∠ EAD) = 51°

∴ m (∠ C) = m (∠ EAD) = 51° Corresponding angles

(6) ∵ $\overline{BA}$ // $\overline{CD}$, $\overline{AC}$ transversal

∴ m (∠ ACD) = 180 - 60 = 120° Interior angles

∵ $\overline{CD}$ // $\overline{EF}$, $\overline{CE}$ transversal

∴ m (∠ DCE) = 180 - 35 = 145° Interior angles

∴ m (∠ ACE) = 360 - (145 + 120) = 95°

(7) ∵ $\overline{EF}$ // $\overline{CD}$, $\overline{CE}$ transversal

∴ m (∠ E) = m (∠ ECD) = 40° Alternate angles

∵ $\overline{CD}$ bisect (∠ ECB)

∴ m (∠ DEB) = 40°

∵ $\overline{CD}$ // $\overline{BA}$, $\overline{CB}$ transversal

∴ m (∠ B) = 180 - 40 = 140°

(8) ∵ $\overline{AB}$ // $\overline{CE}$, $\overline{CB}$ is transversal

∴ m (∠ B) = m (∠ ECD) = 62° Corresponding angles

∴ m (∠ ECA) = m (∠ A) = 48° Alternate angles

∵ m (∠ A) + m (∠ B) + m (∠ C) = 180°

Sum of interior angles of triangle

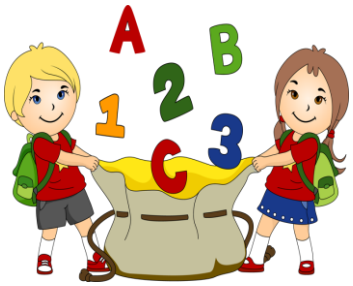
∴ m (∠ C) = 180 - (62 + 48) = 70°

(9) ∵ $\overline{EA}$ // $\overline{BC}$, $\overline{AB}$ is transversal

∴ m (∠ B) = m (∠ A) = 58 × 2 = 116° Alternate angles

∵ $\overline{AB}$ // $\overline{CD}$, $\overline{BC}$ is transversal

∴ m (∠ C) = 180 - 116 = 64° (interior angles)



(10) ∵ Figure (1 , 2 , 4)

(11) ∵ $\overline{AF}$ // $\overline{BD}$ // $\overline{CE}$ and

AB = AC

∴ AD = AE = $\frac{12}{2}$ = 6 cm

(12) ∵ $\overline{AF}$ // $\overline{DE}$ // $\overline{BC}$ and AD = DB

∴ AE = EC = 4 cm

∴ p. of Δ ABC = 5 + 5 + 6 + 4 + 4 = 24 cm

(13) ∵ $\overline{YX}$ // $\overline{ED}$ // $\overline{CB}$,

AY = YE = EC = 3 cm

∴ AX = XD = DB = 2 cm

∵ p. of Δ ABC = 23 cm

∴ BC = 23 - [2 + 2 + 2 + 3 + 3 + 3] = 8 cm